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APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
08/604,255	04/18/96	OKIUMA	N 35.011365

E1M1/0730  
F1TZPATRICK CELLA HARPER AND SCINTO  
277 PARK AVENUE  
NEW YORK NY 10172

EXAMINER

ANNICK,C

ART UNIT PAPER NUMBER

2108 6

DATE MAILED: 07/30/97

This is a communication from the examiner in charge of your application.  
COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

Responsive to communication(s) filed on 11/25/96 (Priority Paper)

This action is FINAL.

Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s) or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

Claim(s) 1-15 is/are pending in the application.

- Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

Claim(s) \_\_\_\_\_ is/are allowed.

Claim(s) 1-15 is/are rejected.

Claim(s) \_\_\_\_\_ is/are objected to.

Claims \_\_\_\_\_ are subject to restriction or election requirement.

Application Papers

See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

The proposed drawing correction, filed on \_\_\_\_\_ is  approved  disapproved.

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

All  Some\*  None of the CERTIFIED copies of the priority documents have been

received.

received in Application No. (Series Code/Serial Number) \_\_\_\_\_

received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

Notice of Reference Cited, PTO-892

Information Disclosure Statement(s), PTO-1449, Paper No(s). 4

Interview Summary, PTO-413

Notice of Draftsperson's Patent Drawing Review, PTO-948

Notice of Informal Patent Application, PTO-152

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## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities: The “Brief Description of the Drawings” provided in the specification is not sufficient for proper understanding of the invention. (See MPEP 608.01(f) and 37 CFR 1.74 “*Reference to drawings*”).

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites a “constituting member” which is unclear since it is not apparent as to what structural element this refers to. Claim 1 also recites “A liquid jet recording head comprising...”, however no structural elements are provided in the claim to support this apparatus. In addition, the parts of the resin composition recited in the claim do not seem to have any relationship with the ink jet recording head and merely list the elements of a chemical composition with applicable utility to any apparatus.

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***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. Claims 1-4 and 8-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Ohkuma et al. (U.S. 5,478,606).

Ohkuma et al. discloses a liquid jet recording head which includes a member formed from a cured product of a resin composition comprising an epoxy and a photopolymerization initiator which acts to cure the epoxy (see column 5, lines 35-60). The resin composition which also includes a compound which contains functional group which reacts with the curable epoxy as well as a fluorocarbon moiety, is subjected to cationic polymerization and (see column 5, lines 61-68 and column 6, lines 4-6). Note: Although the reference does not specifically disclose that this compound contains a reactive “functional group” this group is inherently disclosed since the reference does disclose that this compound “reacts” with the curable epoxy which in most cases involves a functional group (see column 6, lines 1-6). The resin composition of Table 1 indicates that the compound which has the functional group which reacts with the curable epoxy is contained within the resin with in the range of 1-50%. In addition, the compound which contains a fluorocarbon moiety (see column 6, line 6) contains fluorine at an amount of ~30% which is

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well within the range specified. A curing agent is also disclosed in column 5, lines 55-60.

Further, the curable epoxy compound is an aromatic epoxy compound such as bisphenol A (see column 5, lines 35-36). The curable epoxy compound disclosed also includes an alicyclic epoxy compound which is an epoxy compound having an oxycyclohexane skeleton (see column 5, lines 35-42). The reference also discloses a method of making the liquid jet recording head which entails forming an ink flow path pattern from a soluble resin on an ink discharge pressure-generating element on a base plate, forming a coating resin layer on the soluble resin layer, removing of the soluble resin layer by elution, and forming a discharge opening through the coating resin layer (see column 2, lines 28-42). Finally, the reference discloses the a the method of forming the discharge opening is accomplished by the well known technique of photolithography (see column 4, lines 28-32).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkuma et al. (U.S. 5,478,606) in view of Field et al. (U.S. 3,852,222).

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Ohkuma et al. discloses the claimed invention except for the functional group which reacts with the curable epoxy being a hydroxyl group, and where the compound has the structure of an aromatic or alkyl fluorinated diol. Field et al. teaches that it is known to use aromatic and alkyl diols which contain hydroxyl functional groups as compounds useful for polymerization reactions as set forth in column 2, lines 13-20. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use aromatic and alkyl diols which contain hydroxyl functional groups as the compound which reacted with the curable epoxy of Ohkuma et al. as taught by Field et al. in order to provide a polymeric coating to the liquid jet recording head which is highly hydrophobic and therefore extends the life of the liquid jet recording head.

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkuma et al. (U.S. 5,478,606) in view of Miyagawa et al. (U.S. 6,458,254).

Ohkuma et al. discloses the claimed invention except for the discharge opening is formed by oxygen plasma etching. Miyagawa et al. teaches that it is known to use the technique of oxygen plasma etching to form a discharge opening of a liquid jet recording head as set forth in column 3, lines 26-29. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use oxygen plasma etching to form the discharge openings of the liquid jet recording head of Ohkuma et al. as taught by Miyagawa et al. in order to provide precision cutting of the discharge openings without cracking or breaking the plate.

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8. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkuma et al. (U.S. 5,478,606) in view of Koike (JP 5,138,882).

Ohkuma et al. discloses the claimed invention except for the discharge openings of the liquid jet recording head being formed by excimer laser irradiation. Koike teaches that it is known to form discharge openings of a liquid jet recording head by excimer laser irradiation. It would have been obvious to use the technique of excimer laser irradiation to form the discharge openings of the liquid jet recording head of Ohkuma et al. as taught by Koike in order to provide a precisely formed discharge opening which can be accomplished quickly.

*Conclusion*

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Annick whose telephone number is (703) 308-6398. The examiner can normally be reached on Monday to Friday from 8:00 to 5:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Benjamin Fuller, can be reached on (703) 308-1782. The fax phone number for this Group is (703) 305-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1782.

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*C. Annick*  
Christina Annick

July 16, 1997

*B. R. Fuller*  
BENJAMIN R. FULLER  
SUPERVISORY PATENT EXAMINER  
ART UNIT 218